enzyme ribonuclease which splits RNA. He confirmed [1940] the view that RNA plays a role in the protein synthesis.

Avery, in collaboration with M. McCarty and C. M. McLeod, extracted and transferred nucleic acid [DNA] from one strain of bacteria to another, and showed that the latter thereby acquired the hereditary characteristics of the former, thus showing that DNA may provide the chemical and physical basis of heredity. The discovery, because of its far-reaching implications, aroused much interest, and Avery was proposed for a Nobel Prize. But doubts were also expressed, and the Nobel Committee found it desirable to postpone an award. Actually, Avery's finding was not accepted in all quarters until A. D. Hershey [see p. 208] and M. Chase, in 1952, demonstrated that bacteriophage-DNA carries the viral genetic information from parent to progeny.

Important knowledge was also obtained in experiments on other viruses. In general, the virus particle consists of a capsule of regularly arranged protein molecules surrounding a nucleus containing DNA [in larger animal viruses and bacteriophages] or RNA [in plant viruses and small animal viruses]. In work on the tobacco mosaic virus, TMV [see p. 178], it was shown by H. Fraenkel-Conrat and by A. Cierer and G. Schramm [1956–1957] that the RNA separated from the protein capsule contains the whole information for the biosynthesis of TMV in the infected cell, i.e. RNA is able to carry the genetic information. This nucleic acid thus serves the same function as DNA in bacteria.

Thus, Avery's discovery in 1944 of DNA as carrier of heredity represents one of the most important achievements in genetics, and it is to be regretted that he did not receive the Nobel Prize. By the time dissident voices were silenced, he had passed away.

The discovery that DNA carries the genetic information stimulated interest in the details of its structural characteristics, and, in 1953, FRANCIS CRICK [b. 1916] and JAMES WATSON [b. 1928] by interpreting the X-ray diffraction data of MAURICE WILKINS [b. 1916], presented a fruitful model for the three-dimensional structure of DNA. For the achievements in this field, both the use of X-ray crystallography introduced by W. H. and W. L. Bragg [Nobel Prize in Physics, 1915] and partition chromatography, invented by A. J. P. Martin and R. L. M. Synge [Nobel Prize in Chemistry, 1952], played an important role. Using the latter method, E. Chargaff had found [1950] that the numbers of adenine [A] and thymine [T] groups were always equal, and so, in any one species, were the numbers